JSC “Rogun HPP”

State Enterprise “Directorate for Flooding Zone of Rogun HPP”

Project Management Group for Energy Facilities Construction under the President of the Republic of Tajikistan

ROGUN HYDROPOWER PROJECT – UPDATED ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT

Volume 3, A9b: Off-Site Traffic Management Plan

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CONTENTS

FIGURES

Background

This Offsite Traffic Management Plan (TMP) Framework sets out a set of generic requirements for traffic management during the construction and operation phases of the Project. It provides general guidelines, principles steps and Good International Industry Practices (GIIP) that can be adapted to the project-specific traffic management plan as part of the overarching Environmental and Social Management Plan (ESMP) and other relevant environmental and social risk due diligence documents of the project. Accordingly, the objectives of this framework TMP include but not limited to establish general requirements of traffic management to be implemented by the project proponent and contractor to avoid and minimize traffic disturbance and ensure the safety of public and project workers during the project construction and operation.

This TMP Framework is intended to be used for traffic management during the construction and operation stage of a project which may have potential impacts on road traffic and related public/worker safety concerns caused by road traffic. These include e.g. direct road construction or maintenance, construction activities occupying road or sidewalk, construction vehicles/equipment entering public roads, and construction vehicles/equipment through local community roads, etc.

During the preparation, construction and operations, a project onsite -specific traffic management plan using this TMP as a general framework, taking into account project-specific situation and demand, will be developed as part of the project's Contractors ESMP or other E & S documents as appropriate. In addition, during the implementation of the project, this TMP (or the project contractor specific TMP) will be incorporated into the bidding documents and latterly the construction contracts, as part of the environmental and social management specifications.

Purpose and Applicability Traffic Management Plan Framework

Each Contractor employed at Rogun Hydropower Project (the Project) will prepare and implement a Traffic Management Plan or Contractor's Traffic Management Plan (TMP or C-TMP) that is consistent with this Framework. The Plan will be reviewed and approved by the Contractor's Project Manager and submitted to the Employer's Representative (ER) and/or the Project Management Consultant (ER/PMC) for review. Once approved, it shall be diligently implemented by the Contractor.

New Contractors must have an approved Plan before mobilizing workers. Existing Contractors must have an approved Plan within six months of the date that World Bank financing is provided to the Project or as otherwise required by the contract. If an existing Contractor has a TMP that has been approved by the ER, a new plan is not needed if the ER verifies the existing plan is equivalent to what is required by this Framework, or if the Contractor makes sufficient changes to the existing plan that the ER determines it is equivalent.

The purpose of this Framework is to identify the minimum requirements for the Contractors' TMPs, and to ensure the Plans contains the required content, although the Plan may vary based on the potential traffic hazards and risks of the works the Contractor is required to perform.

SCOPE: This Construction Site Framework Traffic Management Plan is a reference guide for contractors to prepare, implement and manage traffic at their construction sites through sharing some good practices. This framework TMP is not intended to be a duplication of the Traffic and Transport assessment nor a substitute to Contractors TMP. However, this framework TMP does not apply to areas outside the construction workplace where the contractor has no management control and for which a separate TMP has been prepared for Offsite Traffic. This Framework TMP should be read in conjunction with the following documents/reports:

- On-Site Traffic Management Plan (Volume 3, A9a)
- Security Management Plan (Volume 3, A7)
- Occupational Health and Safety Management Plans prepared by Contractors to meet requirements of Rogun JSC's OHS Management Plan Framework
- Environmental and Social Management Plan (ESMP) (Volume 3, A1)

1 INTRODUCTION

1.1 OVERVIEW

1.1.1. This **Off-Site Traffic Management Plan** (hereafter referred to as '**OS-TMP'**) has been prepared for the Rogun Open Joint Stock Company (JSC) (hereafter referred to as 'Rogun JSC') by WSP UK Limited (hereafter referred to as 'WSP') for the Rogun Hydropower Project (HPP) (hereafter referred to as 'the Project').

1.1.2. The Government of Tajikistan established Rogun JSC to own and operate the Project. The Project Management Group (PMG) for Energy Facilities Construction, under the President of the Republic of Tajikistan, is the implementing entity responsible for managing the construction of the Project. Rogun JSC oversees both the construction and long-term operation of the Project, which is currently undergoing an extensive phase of construction and partial operation, with two turbines already in active use.

1.1.3. The Project is supported by a lender consortium, led by the World Bank and collectively referred to as the 'Lenders,' which is considering financing the Project. Compliance with the environmental and social policies of the Lenders, aligned under the overarching Environmental and Social Framework (ESF), is essential to meet funding requirements. These requirements are based on the World Bank ESF, including adherence to the World Bank General Environmental, Health, and Safety (EHS) Guidelines: Community Health and Safety and consistent with Tajikistan extant E & S framework.

1.2 TRAFFIC MANAGEMENT AND ESIA ALIGNMENT

This document has been developed in alignment with **Traffic and Transport** Section of this **Environmental and Social Impact Assessment (ESIA**) for construction and operation of the Rogun HPP, and in conjunction with the **On-Site Traffic Management Plan (Volume 3, A9a).** It forms a key component of the traffic management strategy framework required by **Volume 3, A1: Environmental and Social Management Plan (ESMP)** of this ESIA.

The OS-TMP integrates findings from evaluations of current off-site traffic practices conducted in consultation with Rogun JSC, Contractors, and the Employer's Representative. It addresses identified risks related to transport activities beyond the Project boundaries resulting from Project traffic and ensures alignment with the ESMP requirements, Project objectives, and World Bank ESF standards.

Traffic and Transport

Traffic accidents have been decreasing in Tajikistan in recent years, from 1303 recorded incidents in 2017 to 1096 incidents in 2022. Deaths due to traffic incidents also decreased nationally from 2017-2021, from 431 to 375 deaths, although an increase in mortality was recorded in 2022 (416 deaths).

Locally, in the Rasht zone, both accident rates and fatality rates have remained relatively steady over the same period. The fewest accidents occurred in 2021 (3) and the fewest fatalities in 2019 (2). The most accidents occurred in 2022 (11) and the most deaths in 2020 (7). Although evidence lacks on the traffic accidents for the Project area specifically, both women and men FGDs highlight road safety concerns of communities and the poor road conditions due to ongoing construction and use of heavy trucks.

This section presents the baseline data for the Traffic and Transport Assessment for the Project. The information presented here is to be read in conjunction with Traffic and Transport Section of this ESIA. No primary transport baseline data collection was undertaken for the 2014 ESIA. The baseline conditions at the site reflect existing operations plus the construction work that is ongoing.

Secondary baseline data sources have been utilized through desk-based studies to identify key issues based on existing maps, previous studies, satellite imagery and other relevant material.

Tajikistan Transport Network

Tajikistan is a landlocked and mountainous country, surrounded by Afghanistan, the People's Republic of China (PRC), Kyrgyzstan, and Uzbekistan. Approximately 93% of Tajikistan's terrain is mountainous, complicating transport and transit. Most of the transport infrastructure was built during the Soviet period and was designed to optimize the Soviet system of inter-republic linkages between other Soviet republics. After Tajikistan became independent in 1991, relationships between Tajikistan and the neighboring countries changed and the Tajik Civil War began, affecting the transport networks and reducing inter-country traffic volumes and trade.

As a result, passenger transport reduced by three quarters, freight transport by two thirds, and freight turnover by three quarters during 1990–1996. As such, government funding for the transport sector was significantly reduced which has since resulted in the deterioration of the nation's transport infrastructure due to lack of maintenance (ADB, 2021).

National Road Network

The dominant form of transport infrastructure in Tajikistan is roads, which play a key role in facilitating domestic and international connectivity. Road connectivity is oriented mainly toward Uzbekistan, accounting for more than half of the main road border crossing points (BCPs), as well as towards Kyrgyzstan through several BCPs. The nearest seaport to Tajikistan is Bandar Abbas, Iran (approximately 2,500km from Dushanbe, a 35-hour drive) which can be accessed through Afghanistan, but the available transport modes to reach the port are limited, and recent political stability and violence in Afghanistan makes transit through the country difficult.

The ADB 2021 transport sector assessment indicates that around 56% of Tajikistan's roads are in poor condition, particularly smaller local roads (ADB, 2021).

Public Transport

Public transport exists in cities in Tajikistan. In Dushanbe, buses and white vans (marshrutkas) with line numbers run to most destinations within Dushanbe. A refurbished Grand Bus Station opened in Dushanbe in 2013 which serves passengers who are travelling to suburban areas, other Tajik cities such as Bokhtar, Khujand and Khorog, and international destinations such as Termez (Uzbekistan), Osh (Kyrgyzstan) and Moscow (Russia).

However, aside from this, rural Tajikistan does not benefit from an extensive public transportation network. No buses or trains connect rural suburbs with urban centers. The main form of transport is by car. Rural residents travel either in their own private vehicles or participate in a taxi-sharing system with their neighbors in order to travel to local and regional centers. Some marshrutkas are also available.

Roads in Proximity to the Project

Pamir Highway – (M41 / E60 / AH65)

The M41, more commonly referred to as the Pamir Highway, is an international road traversing the Pamir Mountains through Afghanistan, Uzbekistan, Tajikistan, and Kyrgyzstan. In Tajikistan, the Pamir Highway is divided into sections IB02, RB04, RB07. The RB07 section of the Pamir Highway (M41) runs from border of Kyrgyzstan – Jirgital – Obigarm – Vahdat adjoining with RB04 to Dushanbe, passing the Rogun HPP project site at Obigarm.

WSP visited this section of the M41 highway in September 2024 to assess its condition. The road is a single carriageway highway with a single lane in either direction with bridges and tunnels to traverse the mountainous terrain in which it sits. The asphalt used was of good quality, is wide and clear, and had no obvious defects such as potholes in the approximately 50km stretch assessed by WSP. Construction of the road was almost complete at the time of the visit and the program was due to finish at the end of 2024. Final works being completed included adding bridge expansion joints to the bridges crossing ravines along its length, adding in road markings, and fixing safety barriers. WSP met with the Deputy Director of the Project Management Group for M41 (Obigarm-Nurobod) who stated that the road will undergo a period of stress testing to ensure any defects are identified and rectified before it is opened to the public in early 2025, as is currently planned.

M41 Obigarm-Nurobod Road Realignment Project

The Obigarm-Nurobod road section of the existing Pamir Highway (M41) will be inundated once the HPP reservoir has filled to operating levels. The Obigarm-Nurobod Road Realignment Project will provide a 75 km bypass road. The overall project was divided into 3 sections:

- The Obigarm–Tagi kamar section is about 30km long financed by ADB and OFID;
- The Tagi kamar–Nurobod section is about 44km long financed by the EBRD; and
- The 920-meter-long bridge and its approaches will be financed by AIIB.

These are referred to under “Section 1” and “Section 2” in Paragraph 14.3.8.

In 2019, an Environmental and Social Impact Assessment (ESIA) was prepared for the Obigarm-Nurobod Road Realignment Project by the Ministry of Transport of the Republic of Tajikistan. The Project includes 13 new bridge constructions, rehabilitation of three existing bridges, three new tunnel constructions and six village access roads.

Source: Central Asia Regional Economic Cooperation Corridors 2, 3 and 5 (Obigarm-Nurobod) Road Project ESIA 2019

Figure 14-1 - Schematic of Pamir Highway (M41) Obigarm-Nurobod Road Realignment (Ministry of Transport of the Republic of Tajikistan, 2019)

Due to the international and national importance of the highway, in providing the only major continuous road connection across the Pamir Mountains, it is understood the realignment needs to be completed by November 2025 as the existing highway section will be inundated by the reservoir (Tajik Ministry of Transport, 2019).

Two major new roads are planned for the area surrounding the reservoir:

- One 55km road along the left bank of the lower part of the reservoir, from the dam to the main bridge which will cross the reservoir;

- One on the right bank, upper part of the reservoir, between the bridge and the town of Gharm, located approximately 50 km to the north-east.

As shown in Figure 14-2, the following roads will be affected by the Project:

- Section 1: Main road (M41) on the right bank in the lower part of the reservoir: a considerable part of the realignment of this international road started in the 1980s. Construction stopped shortly after the independence of Tajikistan (September 1991) and the constructed sections have deteriorated over the last 20 years. Recently, the Research and Design Institute in Dushanbe, the state agency responsible for planning and construction of roads, planned to finalize construction of the 76 km new road alignment, which also includes rehabilitation of the damaged sections.
- Section 2: Main bridge over the reservoir: the relocation of the international road also includes a major bridge with a span of 786 m.
- Section 3: Main road on the left bank in the upper part of the reservoir: only a small section of the international road needs to be replaced.
- Section 4: New access road on the right bank in the upper part of the reservoir: an access road needs to be built because of the rugged terrain.
- Section 5: New access road on the left bank in the lower part of the reservoir: an access road is required because of the reservoir.

Sections 1, 2 and 3 are part of the national and international road Dushanbe - Vahdat - Jirgital - (Kyrgyzstan) and are considered associated facilities within this ESIA. An EIA was undertaken as part of the project to rehabilitate the international highway Vahdat – Jirgital.

Sections 4 and 5 are at the pre-feasibility stage of planning and will only be built as a result of the Project. They are included within the Project's assessment.

The KamarOb Valley road

The Kamarob Valley (also known as Kamarov) is a tributary valley on the right bank of the reservoir, located partly within the flooding zone in Rasht District. Currently there are 21 settlements within the valley and its tributary valleys, 9 of which are scheduled for resettlement and 12 of which will remain. The whole valley is covered by the Boqi Rahimzoda jamoat, so named for the Tajik-Soviet writer who was born in the valley. There is one road that goes into and out of the valley. The road continues beyond the uppermost village, but is impassable by vehicle, and the next settlement (Gorif) is a 48-hour walk away.[21] This road passes through the mouth of the valley and will be flooded. It is currently unknown if, how and when the right bank road will be connected to the villages remaining within the valley. The total population of the valley (including Gorif) is approximately 12,000, including approximately 2,000 in the non-resettled villages.

On-site discussions with residents in the upper valley confirmed heavy reliance on travel to settlements outside of the valley to meet basic necessities, particularly Gharm and Rasht City. All interviewed residents in September 2024 reported travelling to these settlements at least monthly, usually utilizing taxi-sharing arrangements with their neighbors.

Figure 14-2 – Roads around the Rogun HPP Project area

Figure 14-3 - To-be-resettled and non-resettled villages of the Kamarob Valley

Accidents and Safety

According to 2016 WHO statistics, the country had an estimated road accident fatality rate per 100,000 population of 13.9 in 2021. For context, this figure is 6.7 and 15 per 100,000 for Europe and the world respectively (WHO, 2024). Of the fatalities, the majority relate to 4-wheeler vehicles (69%), 19% relating to pedestrians, 9% 2 to 3-wheeler vehicles, cyclists 1% and others 2%. The country does not comply with many UN Vehicle Safety Regulations, with the only compliance being import inspections.

Accidents are often attributed to non-compliance with traffic rules by drivers and pedestrians, illegal purchasing of drivers' licenses and inadequate road infrastructure in the country. The country has the highest road traffic accident rate in Central Asia with the WHO requesting advancing of efforts to reduce rates.

The Project prepares quarterly OHS reports on overall OHS performance for submission to authorities. The reports detail excess fatalities and serious incidents, particularly in relation to traffic accidents. The contents of these documents are not universally known so the material of which are unable to be reported in this baseline annex.

There are some settlements within or close to the construction site, surrounded by hauling roads, stockpiles and other construction site structures. Mostly, access to these villages takes place across the site, forcing pedestrians to interfere with the heavy traffic on the roads. As outlined in Table 14-1, data was provided by the Ministry of Transport of accidents on highways within geographic areas between 2017 and 2022.

Table 14-1 - Summary of Ministry of Transport Accident Data 2017 - 2022

Area	Type	2017	2018	2019	2020	2021	2022
Sughd province	Accidents	119	108	99	79	87	85
	Fatal	45	42	35	40	42	41
	Injured	134	115	35	71	81	85
Gorno-Badakhshan Autonomous Province	Accidents	13	12	9	14	13	12
	Fatal	11	3	17	8	16	12
	Injured	19	15	17	13	17	15
Bokhtar zone	Accidents	83	100	153	145	91	81
	Fatal	41	39	45	63	78	48
	Injured	80	90	45	149	130	65
Kulob zone	Accidents	18	42	30	19	9	10
	Fatal	24	33	42	11	18	14

	Injured	27	50	56	33	14	14
Hisor zone	Accidents	157	153	129	101	144	42
	Fatal	62	62	58	48	43	24
	Injured	163	161	131	127	126	55
Rasht zone	Accidents	8	8	4	7	3	11
	Fatal	5	5	2	7	3	6
	Injured	3	6	3	10	4	7
IRS (toll roads) responsibility	Accidents	74	84	104	86	70	63
	Fatal	57	40	66	72	54	52
	Injured	92	106	95	90	112	88
Total on roads of the Republic of Tajikistan	Accidents	1,303	1,295	1,212	1,109	1,102	1,096
	Fatal	431	395	391	376	375	416
	Injured	1,379	1,357	1,314	1,263	1,218	1,197

The data is for spatial areas within Tajikistan and shows that there are a high proportion of deaths per accident, but that have been reductions in the number of accidents, fatalities and casualties since 2017.

Traffic flows

External Traffic Flows

The Ministry of Transport has provided information on traffic flows summarizing roads and highways data of Rogun City for January 2023, the road data pertaining to traffic flows is summarized in Table

Figure 7-17 Traffic and Transport - Baseline Summary 1 of 1

Road Section Around the Rogun Reservoir

- 1: Main road on the right bank in the lower part of the reservoir: a considerable part of the realignment of this international road started in the 1980s. Construction stopped shortly after the independence of Tajikistan (September 1991) and the constructed sections have deteriorated over the last 20 years.
- 2: Main bridge over the reservoir: the relocation of the international road also includes a major bridge with a span of 786 m;
- 3: Main road on the left bank in the upper part of the reservoir: only a small section of the international road needs to be replaced;
- 4: New access road on the right bank in the upper part of reservoir: an access road needs to be built because of the rugged terrain
- 5: New access road on the left bank in the lower part of the reservoir: an access road is required because of the reservoir.

Road Network

The main road from Dushanbe to Obi Garm (M41) branches shortly before reaching Obi Garm to access the Rogun HPP site. Shortly after Obi Garm, short stretches of this road will be submerged in Stage 1 of the reservoir filling while, at later stages of impoundment, longer distances including the only bridge suitable for heavy traffic crossing the river, will disappear. This road is an important international and national road and will be replaced and, where required, road and bridge access to villages lying at higher elevations which will not be relocated will be provided.

Two major new roads were planned for the area surrounding the reservoir. One along the left bank of the lower part of the reservoir, from the dam to the main bridge which will cross the reservoir, the other on the right bank, upper part of the reservoir, between the bridge and the village of Gharm, located approximately 50 km to the north-east.

Road Section Around the Rogun Reservoir (Figure to be updated)

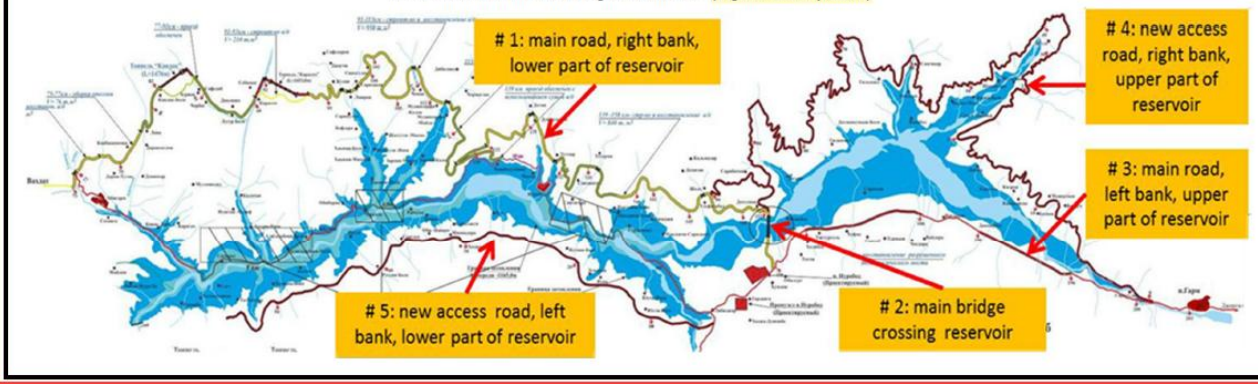


Table 14-2 - Summary of Ministry of Transport Data for Traffic Flows pm

Road/Road Section	Average Daily Traffic: Total Vehicles	Average Daily Traffic: Light Vehicles	Average Daily Traffic: Buses	Average Daily Traffic: Trucks
International roadway Vahdat-Rasht-Lakhsh (from Vahdat through Nurobod, Rasht and Lakhsh to the border with Kyrgyz Republic): Section 62 km to 87 km	3,738	2,820	78	840
Road of Chashmai Kullo village	670	500	-	170
Road of Maidoni Nav village	292	220	-	72
Road of Javoni village	580	420	-	160
Road of Chormagz, Poru Farrukh and Ghofilobod villages	276	230	-	46
Road of Eshono Dehkonobod village	194	160	-	34

Road of Sangova village	142	120	-	22
Road of Sari Pulak Qandak village	1110	800	-	310
Local road departure to Yoli Garmoba (entry from km 2+00 of the road of Javoni village)	101	75	-	26

Internal Traffic Flows

The following data has been provided:

- The daily traffic flow inside the T3 tunnel is 852 units of vehicles, and the total amount of vehicle traffic per month is 25,560 units.
- The daily traffic flow at the entrance and exit of the T3 tunnel is 1,908 units, and the total amount of vehicle traffic in a month is 57,240 units.
- Recordings provided from a network of CCTV cameras operating at the Project site have not been sufficient to provide detailed traffic flows for the Site, particularly given the expectation that traffic flows have a significant variation over time.
- Trucks/heavy goods vehicles (HGVs) transport building materials to site daily routing between the Site and Dushanbe, equating to approximately 33 trips to and 33 trips from the site.

The baseline situation for staff working on the site is approximately up to 12,000 workers at any one time. Estimates of existing worker travel patterns are as follows:

- Up to 4,400 in on-site accommodation;
- 1,500 live in Rogun City adjacent to the site;
- Up to 300 live outside of Rogun City within 30km of the site and are bussed to site;
- Approximately 5,000 live elsewhere in Tajikistan with a shift change every 15 days (total of approximately 10,000 workers across two 15-day shifts; and
- There are a range of shift patterns for employees, including day and night 15-day shifts and office shifts for 5.5 days per week.

SITE ENTRANCE GATE

Access to the site in Rogun City is via a single access point, which is security and military controlled, and is situated south of the main urban area of Rogun City and provides access to the construction site and dam wall area.

As of December 2024, approximately 5,000 workers live off-site, with approximately 12,500 workers living on the construction site. Off-site workers generally travel to the site on foot, car, taxi or bus. Some contractors provide bus transport to and from off-site accommodation at the start/end of shift times.

Shift Rotations

Most of the workforce (excluding office workers) are on a rotational shift pattern, working 15 days on and off, on a 12-hour day or night shift. The majority of the workforce, especially if accommodated on-

site, return home for their rest period. Table 14-3 presents traffic flows on 15th September 2024 on a shift rotation day where traffic flows are assumed at peak. All figures are approximate and calculated using CCTV footage.

Table 14-3 – Shift Rotation Day Traffic Flows at the Rogun Site Entrance Gate (15th Sept 2024)

	Cars	Construction / HGVs (over 3.5 tonnes)	Pedestrians (by foot)
00:00 – 00:59	22	0	26
01:00 – 01:59	13	0	6
02:00 – 02:59	10	0	7
03:00 – 03:59	2	0	7
04:00 – 04:59	19	0	16
05:00 – 05:59	52	9	235
06:00 – 06:59	136	5	440
07:00 – 07:59	104	5	249
08:00 – 08:59	106	13	107
09:00 – 09:59	63	5	75
10:00 – 10:59	68	9	129
11:00 – 11:59	102	5	165
12:00 – 12:59	107	4	300
13:00 – 13:59	126	11	432
14:00 – 14:59	91	5	618
15:00 – 15:59	87	4	495
16:00 – 16:59	92	3	549
17:00 – 17:59	117	7	643
18:00 – 18:59	103	6	618
19:00 – 19:59	95	7	355

20:00 – 20:59	68	19	59
21:00 – 21:59	38	18	66
22:00 – 22:59	29	8	51
23:00 – 23:59	14	0	23
TOTAL	1664	143	5671

Existing Transport Management Plan (TMP)

WeBuild developed a TMP for the HPP Rogun Lot 2, dated 24 May 2023. The TMP was prepared to manage the anticipated increase of traffic flows associated with the resumption of the main dam core activities. This plan serves to ensure that adequate procedures are in place to minimize effects due to the presence of the Project's site vehicles on the local traffic on affected road sections. This plan is being implemented by the Employer for the entire Project site, Rogun JSC. Its implementation is supervised by the HSE team of the Employer's Representative. However, given the practical issues of limited control over the entire site, the compliance is variable between the contractors, with Lot 2 contractors demonstrating the highest adherence to the requirements.

The TMP states that from September to December 2022, the site vehicles and machineries deployed for the works included:

- Bulldozers;
- Roller compactors;
- Tractors;
- Excavators;
- Mobile cranes;
- Dumper trucks;
- Cement mixer trucks;
- Drilling machines;
- Fuel trucks;
- Water trucks; and
- Pick-ups.

Out of this list, bulldozers, roller compactors, tractors, excavators, mobile cranes and drilling machines typically are used locally at the main dam core without the need to be transported in and out of the Project site frequently. The remaining site vehicles enter and exit the main core site daily. It is understood from the TMP that the frequency of these traffic flows will increase significantly and rapidly once the concreting works gain momentum.

The TMP identifies that based on the current/projected site conditions, accesses to the main dam core will be via the following routes:

- a. External site road from the entrance of Tunnel T4 passing through the downstream embankment work area and heading towards the downstream side of the Main Dam Core.
- b. Tunnel road from the entrance of Tunnel T4 and passing through Tunnel T2, and finally exiting Tunnel T2 and making a left turn at the tunnel exit heading towards the upstream side of the Main Dam Core. Figure 14-4 shows the two routes.

  Figure 14-4 - Indication of routes to Main Dam Core

The TMP includes the following key features:

- Two-way traffic allowed as normal for routes:
- Tunnel T22;
- Site access to cofferdam upstream work site;
- Site access to downstream of main dam core; and
- Tunnel T3 from upstream tunnel entrance to junction between T3 and T5'.
- One-way traffic restriction as indicated for routes:
- From Tunnel T4 to Tunnel T2;
- From Tunnel T2 to Tunnel T5';
- From Tunnel T5' to Tunnel T3; and
- From Junction of T3/T5' to T3 exit (downstream), with special exceptions as stipulated in this section.
- During the following periods, tunnel section from the junction of T3/T5' to T3 exit (downstream) is opened to two-way traffic for specific categories of vehicles/machineries:
- 0600 – 0700 am
- 1200 – 1300 pm
- 1800 – 1900 pm
- 2400 – 0100 am
- The specific categories of vehicles/machineries allowed during the exempted time periods are:
- Dump Truck Tonnage 30t, 40t & 50t
- Dump Truck Articulated Tonnage 40t
- Flatbed Tonnage 40t
- Mobile crane Tonnage 25t, 70t, 180t
- Auto grader 16.1t
- Bulldozer

- Loader Bucket 6.4 cumec
- Manipulator 12t
- Petrol Tanker 35

The TMP also includes control measures to manage road safety which comprise engineering, organizational, technical and behavioral rules that are intended to control and mitigate the risks related to road transport activities.

1.3 TRAFFIC MANAGEMENT PLAN OVERVIEW AND FRAMEWORK

1.3.1. The traffic management strategy framework for the Project comprises two interconnected plans to manage traffic-related risks comprehensively.

1.3.2. **Volume 3, A9a: On-Site Traffic Management Plan (TMP)** addresses traffic management within Project boundaries, providing structured requirements and guidance to ensure safe, efficient, and compliant operations on-site.

1.4 REPORT PURPOSE

1.4.1. The OS-TMP Framework provides requirements and guidance for off-site traffic management, focusing on activities beyond the Project boundaries, such as the use of public roads for delivery of materials and goods, transport of oversized and complex loads, worker transportation, and other logistics. Together, these plans establish a cohesive framework to manage traffic risks, optimise transport operations, and safeguard workers, contractors, and the surrounding communities.

1.4.2. The development of this OS-TMP has been informed by findings from **Traffic and Transport Section** of this ESIA, which assessed potential traffic impacts on communities, road users, pedestrian safety, and the transport of hazardous and oversized loads. This document is aligned with the findings and the mitigation and enhancement measures identified in the assessment, ensuring that off-site traffic risks are managed in accordance with Project objectives and Lender's ESF requirements.

1.4.3. This document is designed to adapt to the evolving nature of the Project and will remain a living document to reflect changing conditions, transport demands, and stakeholder feedback.

1.5 OBJECTIVES

1.5.1. The primary objectives of this OS-TMP Framework are to:

- Establish a structured and standardised framework for managing off-site transport activities, including the movement of materials, equipment, and workers along public routes, including from Dushanbe to the Project, and thus ensure safe, efficient, and compliant operations.
- Minimise off-site traffic risks to public road users, local communities, and Project personnel by addressing logistical challenges, implementing targeted risk mitigation measures, and safeguarding community safety through planned and communicated transport routes.
- Ensure all off-site transport activities comply with Tajikistan's legal and regulatory requirements, including those of the Ministry of Transport, as well as international standards outlined below.
- Facilitate the safe and efficient movement of oversized and complex loads, ensuring adherence to route-specific requirements, road safety protocols, and hazard control measures.

- Support Rogun JSC and the [1]Project Management Consultant (PMC) in supervising Contractor compliance with traffic and transport requirements.

1.6 SUPPORTING PLANS AND DOCUMENTS

1.6.1. The following plans and documents complement the OS-TMP and must be consulted to ensure a coordinated approach to traffic safety, regulatory compliance, and site management:

- On-Site Traffic Management Plan (Volume 3, A9a)
- Security Management Plan (Volume 3, A7)
- Occupational Health and Safety Management Plans prepared by Contractors to meet requirements of Rogun JSC's OHS Management Plan Framework
- Environmental and Social Management Plan (ESMP) (Volume 3, A1)
- Additional plans and procedures, prepared alongside this Plan and referenced throughout this document as relevant.

[1] As of early 2025, an Employer's Representative (ER) acted on behalf of Rogun JSC to supervise environmental and social performance of Contractors. When international financing becomes available, the ER will be replaced by a Project Management Consultant. Reference to the ER or the PMC should be taken as a reference to either or both.

2 APPLICABLE LAWS, STANDARDS AND GUILDELINES

2.1.1. This document has been informed and developed in alignment with key national legislation, international standards, and regulatory frameworks governing off-site traffic and transport operations in Tajikistan.

2.2 TAJIKISTAN NATIONAL LAWS AND STANDARDS

GOVERNMENT RESOLUTION 779/2006 – OVERSIZED LOAD TRANSPORT

2.2.1. Governs the transport of oversized loads in Tajikistan, requiring Ministry of Transport oversight and coordination with the State Traffic Police to ensure safe passage and assess infrastructure suitability along designated routes.

CODE OF ROAD TRANSPORT OF THE REPUBLIC OF TAJIKISTAN (LAW NO. 1689)

2.2.2. Establishes the legal framework for vehicle operations on public roads, including specific standards for oversized and hazardous load transport. This law governs driver licensing, vehicle compliance, speed limits, and access controls to ensure safe and reliable transport activities.

LAW OF THE REPUBLIC OF TAJIKISTAN "ON ROADS AND ROAD ACTIVITIES" (ARTICLE 46)

2.2.3. Regulates the safe movement of dangerous goods by road, prescribing protocols for the secure and compliant.

RULES FOR PASSING BY HIGHWAYS OF VEHICLES WITH LOADS EXCEEDING ESTABLISHED NORMS (2006):

2.2.4. Issued by the Government of the Republic of Tajikistan, this decree provides detailed procedures and requirements for the transport of vehicles carrying loads that surpass standard weight and dimension limits on highways. It mandates special authorisation, route suitability assessments, and coordination with local traffic authorities to ensure the safe and compliant movement of oversized loads while minimising disruption to public road users.

MINISTRY OF TRANSPORT REGULATIONS ON VEHICLE INSPECTION AND LICENSING (2005)

2.2.5. These regulations, established by the Ministry of Transport in 2005, outline mandatory procedures for vehicle inspections and licensing to maintain safety and operational reliability. They ensure that all vehicles involved in transport activities meet required safety standards before operating on public roads

LAW ON ROAD TRANSPORT (LAW NO. 477)

2.2.6. Establishes the overarching legal framework for road transport operations in Tajikistan, detailing operator responsibilities, safety standards, and operational protocols. This law ensures all transport activities comply with national road transport regulations and legal requirements.

2.3 INTERNATIONAL STANDARDS AND E&S GUIDELINES

UNECE TRANSPORT CONVENTIONS

2.3.1. Tajikistan's participation in UNECE conventions ensures alignment with international standards for vehicle safety, operational protocols, and environmental management. Key provisions include:

- Requirements for vehicle safety features (e.g., stability controls for oversized loads).
- Best practices for managing road hazards, such as landslides and low-visibility conditions.

WORLD BANK ENVIRONMENTAL AND SOCIAL FRAMEWORK (ESF)

2.3.2. **ESS1: Assessment and Management of Environmental and Social Risks and Impacts**: Provides a framework for identifying and mitigating risks associated with transport operations.

2.3.3. **ESS3: Resource Efficiency and Pollution Prevention and Management**: Ensures that traffic-related environmental impacts such as vehicle emissions, fuel consumption, and hazardous material spillages are minimized through resource-efficient practices and pollution control measures.

2.3.4. **ESS4: Community Health and Safety**: Focuses on minimising risks to local communities, particularly related to road safety and hazardous materials transport.

WORLD BANK GUIDELINES AND NOTES

2.3.5. **General EHS Guidelines (2007): Community Health and Safety**: Outlines best practices for road safety and managing risks to public health from transport activities.

2.3.6. **Good Practice Note: Road Safety**: Provides strategies to integrate road safety measures into transport planning and logistics operations.

2.3.7. **Guidance Note for Borrowers: Environmental & Social Framework for IPF Operations – ESS3: Resource Efficiency and Pollution Prevention and Management**

Provides practical guidance for minimizing environmental impacts from project-related traffic, including controlling vehicle emissions, promoting fuel efficiency, and managing hazardous materials such as fuel and lubricants to prevent spills and contamination.

2.3.8. **Guidance Note for Borrowers: Environmental & Social Framework for IPF Operations – ESS4: Community Health and Safety**

Outlines practical guidance for integrating traffic safety measures into project planning, particularly in high-risk areas near settlements or public roads.

UNITED NATIONS GLOBAL PLAN FOR THE DECADE OF ACTION FOR ROAD SAFETY 2021–2030

2.3.9. Offers a roadmap for reducing road traffic risks through safe system principles, particularly for oversized and complex transport operations.

2.4 PERMITS AND APPROVALS

SPECIAL TRAVEL CERTIFICATE

2.4.1. Mandated under Government Resolution 779/2006, this certificate authorises the transit of oversized loads, ensuring compliance with safety protocols and route viability assessments.

OVERSIZED LOAD PERMITS

2.4.2. Issued by the Ministry of Transport, these permits authorise the movement of oversized cargo along designated routes. They ensure regulatory compliance and minimise disruption to public road users.

ENVIRONMENTAL APPROVALS

2.4.3. Transport operations must adhere to World Bank environmental guidelines and secure applicable permits to manage emissions, reduce environmental impacts, and ensure safe waste management practices.

3 TRAFFIC RISK ASSESSMENT AND HAZARD MITIGATION STRATEGY

3.1.1. Key risks include road safety concerns, pedestrian and community safety, road infrastructure degradation, driver delays, and specific risks from the transportation of hazardous and oversized loads. While ongoing road upgrades along sections of the M41 highway and improved infrastructure are expected to mitigate some risks, targeted measures are required to address remaining challenges effectively.

3.2 KEY RISK AREAS

COMMUNITY AND PEDESTRIAN SAFETY

3.2.1. Increased traffic volumes and the presence of heavy goods vehicles (HGVs) along the M41 highway and surrounding rural areas pose significant safety risks to communities. These risks are heightened in areas where road conditions are substandard, and formal pedestrian crossings or separation between vehicles and pedestrians with dedicated pedestrian walkways are insufficient. The presence of such walkways and crossings can improve safety for vulnerable groups such as children and older people.

ROAD INFRASTRUCTURE AND CONDITION

3.2.2. High traffic volumes, particularly from heavy goods vehicle (HGV)s and oversized loads, accelerate road degradation, leading to unsafe conditions for all users. Specific sections of the M41 highway, such as the stretch between Kalaynay and Obigarm, require targeted upgrades due to frequent potholes, sharp turns, and steep gradients lacking safety barriers.

Realigned sections of the M41 between Obigarm-Nurobod are expected to alleviate some of these risks with improved capacity and safety features.

OVERSIZED AND HAZARDOUS LOADS

3.2.3. The transport of hazardous materials and abnormal loads for the Project presents unique challenges. Movements require compliance with national regulations, Ministry of Transport permits, and coordination with local authorities for safe passage and consistent with the WB ESF and GIIP.

DRIVER BEHAVIOUR AND DELAY

3.2.4. Extended transport routes and limited infrastructure contribute to driver fatigue, unsafe practices, and potential delays, particularly at intersections, site entrances, and high-traffic urban zones like near the main gate in Rogun City. Worker shift changeovers can exacerbate congestion due to the heavy reliance on private vehicles and taxis in the absence of organised transport solutions, and vehicles parked on roadside verges outside the gate can delay passing traffic.

3.3 TRAFFIC RISK MANAGEMENT FRAMEWORK

ALIGNMENT WITH TAJIKISTAN LEGISLATION

3.3.1. The Traffic Management Framework complies with Tajikistan’s transport laws to ensure safe and efficient project-related vehicle operations. Oversized load transport, governed by Government Resolution 779/2006, requires permits from the Ministry of Transport and coordination with the State Traffic Police to ensure safe passage along designated routes.

3.3.2. Vehicles must meet safety standards as per the Ministry of Transport Regulations on Vehicle Inspection and Licensing (2005). Transport activities follow the Code of Road Transport (Law No. 1689) and Law on Road Transport (Law No. 477), ensuring driver licensing, vehicle compliance, and adherence to road safety protocols. The Law "On Roads and Road Activities" (Article 46) mandates secure transport for hazardous materials, while the Rules for Passing by Highways of Vehicles with Loads Exceeding Established Norms (2006) require route assessments and local authority coordination for heavy or oversized loads.

RISK MANAGEMENT PRINCIPLES

3.3.3. Effective off-site traffic risk management relies on the following principles:

- **Route Planning:** Identifying and assessing transport routes to ensure their suitability for project-related traffic, particularly for oversized and hazardous loads.
- **Mitigation of Community Impacts:** Minimising risks to pedestrians, local residents, and public road users by implementing traffic control measures and maintaining open communication with affected communities.
- **Regulatory Compliance:** Ensuring all transport activities meet national regulatory requirements, including obtaining permits for oversized loads and coordinating with traffic authorities.
- **Collaboration:** Working with the Ministry of Transport, State Traffic Police, local authorities, and nearby communities and settlements to maintain safe and efficient transport operations. This includes addressing local concerns, planning traffic management measures to reduce disruptions, and incorporating feedback into transport strategies.

HIERARCHY OF CONTROL

3.3.4. The hierarchy of control provides a structured approach to managing off-site traffic risks, prioritising measures that deliver the highest levels of protection and reliability. These include:

- **Elimination**: Reducing unnecessary transport activities by consolidating loads and scheduling deliveries to avoid peak traffic periods.
- **Substitution:** Employing safer transportation methods where possible, such as using escorted convoys for hazardous or oversized loads.
- **Engineering Controls:** Upgrading infrastructure along key routes, such as repairing damaged road sections and installing reflective markers and warning signage.
- **Administrative Controls:** Enforcing traffic management policies, including mandatory use of permits, pre-approved routes, and clear transport schedules.
- **PPE and Visibility:** Ensuring relevant workers involved in off-site traffic management wear high-visibility clothing and have access to appropriate safety equipment (e.g. traffic marshals, loading/unlading activities etc).

COLLABORATION AND CONSULTATION

3.3.5. A coordinated approach involving stakeholders is essential for effective off-site traffic risk management:

- **Permits and Approvals:** Rogun JSC must ensure that all necessary permits, including Special Travel Certificates and Oversized Load Permits, are obtained in advance.
- **Local Authorities and Police Escorts:** Coordination with local authorities and the State Traffic Police is required for escorting abnormal loads, road closures, and notifying communities about transport schedules.

- **Community Engagement: Regular** consultations with communities along transport routes to address safety concerns, provide updates, and gather feedback on transport activities.
- **Contractor Responsibilities**: Contractors must ensure their drivers comply with agreed traffic management measures, including speed limits, designated routes, and operational protocols. These protocols govern aspects such as vehicle entry and exit, use of personal protective equipment (PPE), communication practices, driving behavior, parking and idling, reversing procedures, spill response readiness, and night driving requirements.

4 TRAFFIC ROUTES AND SITE ACCESS

4.1 PRIMARY TRANSPORT ROUTE

4.1.1. The Dushanbe–Rogun road (M41 corridor) serves as the primary route for project-related transport, facilitating the movement of materials, equipment, and personnel. This key transport artery connects the project site to Dushanbe and other regions.

ROUTE CHARACTERISTICS

4.1.2. The M41 corridor includes a combination of well-maintained asphalt sections and deteriorated stretches, particularly between Kalaynay and Obigarm. Conditions that present significant challenges and the potential for Project traffic to have adverse impacts on traffic include:

- **Potholes, Steep Gradients, and Sharp Bends**: Specific segments require careful navigation to ensure safety, particularly for heavy or oversized vehicles.
- **Limited Safety Barriers:** Some areas lack sufficient edge protection, increasing risks near steep drops and embankments.
- **Proximity to Local Communities**: The route passes through a few residential settlements, presenting risks to pedestrians and other traffic.
- **Diverse Road Users:** Traffic includes private vehicles, taxis, buses, and project-related HGVs, necessitating traffic flow management and coordination.

4.1.3. Transport activities must account for these factors, with pre-transport assessments to ensure safe passage.

4.1.4. See **Figure 4-1**: Aerial view of the Dushanbe–Rogun route highlighting key settlements and general terrain.

4.2 SECONDARY TRANSPORT ROUTES

4.2.1. In addition to the primary M41 corridor, a number of secondary routes may be utilized on an as-needed basis to support the project's logistics, particularly in response to road closures, peak traffic conditions, or the transportation of materials to remote work fronts.

4.2.2. These secondary routes include local access roads connecting smaller settlements or bypassing congested segments of the M41, as well as internal construction access tracks developed for specific activities such as tunneling, spoil disposal, or temporary staging areas.

4.2.3. The use of secondary routes will be determined based on operational needs, road condition assessments, and coordination with local authorities to minimize disruptions to community traffic and reduce safety risks.

4.2.4. When activated, these routes will be subject to the same safety protocols and monitoring requirements as the primary route, including pre-use inspections, signage placement, and community notification. Contingency plans must also be in place to ensure secure and controlled access where community exposure is elevated.

4.3 WEATHER AND SEASONAL HAZARDS

4.3.1. The region's continental climate presents significant seasonal hazards, including:

- Slippery road conditions during snow and ice in winter.

- Flooding and landslides triggered by spring rains.

4.4 SITE ACCESS POINTS

MAIN SITE ACCESS GATE

4.4.1. The primary access gate near Rogun City connects directly to the M41 highway, just before the route reaches Rogun City. Most Project-related traffic uses this route, including deliveries and most personnel transport. Key features include:

- Separate lanes for inbound and outbound traffic for vehicle entry and exit to the project site.
- Security checkpoint for vehicle inspections, document verification, and regulated entry.

SECONDARY ACCESS POINTS

4.4.2. A secondary access point northeast of the project boundary connects the east and west banks of the Vakhsh River via a temporary suspension bridge. This route primarily serves east-bank construction activities and stockpile transport. Key features include:

- A single-lane, temporary structure with a 10 km/h speed limit that will be decommissioned and removed in late 2025 or 2026.
- Limited to authorised vehicles and personnel, with reduced traffic volumes compared to the main gate. This includes a few vehicles and pedestrians from two nearby villages that have been issued permits to cross the site in order to reach Rogun City.

FUTURE DEVELOPMENTS

Bridge between Left and Right Banks

4.4.3. A total of five bridge across the Vakhsh River will be inundated when the reservoir reaches 1290 masl; the first two will be lost when the reservoir level is raised to 1100 masl in late 2025 or 2026. In addition, up to five bridges that cross left bank tributaries will be lost, as will some sections of the existing local road that connects left bank villages to these bridges and to one another.

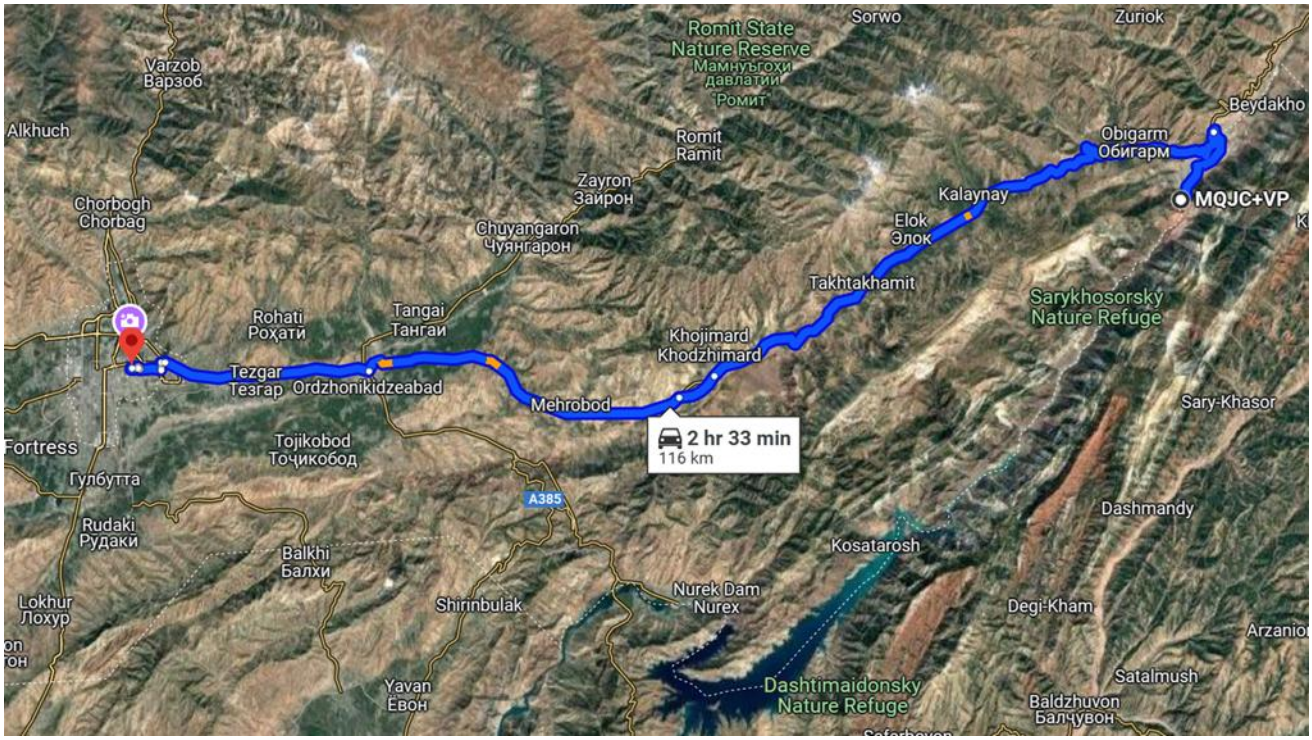
4.4.4. A permanent bridge is planned to allow traffic to connect the left bank to the right bank and allow access of left bank villages to the realigned M41 road. This bridge will provide essential access to healthcare, employment, shopping, and social activities for left-bank residents.

Construction of a New Road to the Upper Kamarob Valley

Due to the inundation of the existing road by the reservoir, a new road connection is proposed for the Upper Kamarob Valley (on the right bank of the river). The road will follow the official **national road construction standards and regulations** set by the government of Tajikistan.

Figure 4-1 - Map overview of the Dushanbe-Rogun route (M41 corridor), spanning 116 km with an estaimated travel time of 2 hours and 33 minutes.

The primary artery connects Dushanbe to the Rogun HPP site, passing through key settlements and varying terrain



5 ROAD CONDITIONS AND TRAFFIC INFRASTRUCTURE

5.1 ROAD QUALITY AND INFRASTRUCTURE

5.1.1. The Dushanbe–Rogun road (M41 corridor) traverses diverse terrain and infrastructure, and exhibits varying conditions along its length, including the following.

- **Well-Maintained Asphalt Sections**: Photos 1, 2 and 6 show such sections of the road.
- **Intermediate Bitumen Sections:** Some stretches are surfaced with bitumen but lack visible lane markings.
- **Gravel and Dirt Sections:** A few short, unsealed sections, particularly where ephemeral water has washed out the paved road, pose challenges such as loose surfaces, dust, and uneven terrain. These areas are particularly hazardous during adverse weather. Examples are shown in Photos 3 and 4..

Photo 1: A well-maintained asphalt section with clear lane markings and protective barriers.

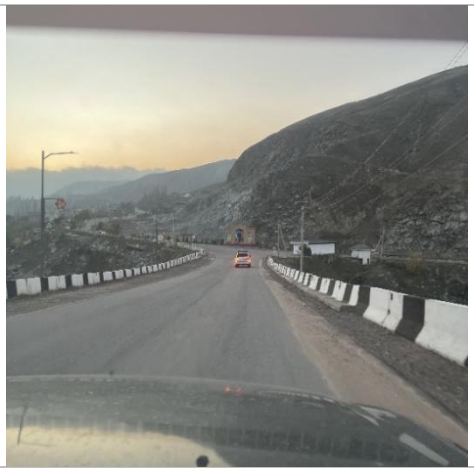


Photo 2: A segment showing transition zones with diminished pavement quality and fewer markings.

Photo 3: Congested traffic on a pothole-ridden road underscores the urgency of repairs and better traffic flow management.

Photo 4: Roadside construction with limited lighting and uneven surfaces highlights the need for traffic control.

	
Photo 5: Limited nighttime visibility on the Dushanbe–Rogun route highlights the need for improved lighting and reflective signage.	**Photo 6:** A well-maintained section of the Dushanbe–Rogun route with clear markings and safety barriers showcases improved infrastructure.

5.2 ROAD CONSTRAINTS AND ENVIRONMENTAL CHALLENGES

NARROW PASSES AND SHARP TURNS

5.2.1. The Dushanbe–Rogun route includes several narrow sections and steep curves, particularly near Obigarm and in mountainous areas (illustrated in GPS Screenshots 1 and 2). The slow passage required for oversized vehicles and HGVs to pass these areas can reduce traffic flow efficiency increase the risk of accidents.

	
GPS Screenshot 1 *(Elevation: 1,617 m):* Highlights a sharp curve requiring reduced speeds and traffic management measures.	**GPS Screenshot 2** *(Elevation: 1,509 m):* Shows steep gradients and constrained road geometry, emphasizing the importance of pre-transport planning and driver awareness.

BRIDGES AND STRUCTURAL CONSTRAINTS

5.2.2. Bridges along the route serve as critical transport links but are subject to weight and width limitations. Oversized load transport must comply with Ministry of Transport standards, with traffic personnel deployed as required to manage single-lane crossings and maintain traffic flow.

SEASONAL AND ENVIRONMENTAL FACTORS

5.2.3. Adverse weather conditions, including heavy rainfall, snow, and landslides, pose significant risks to road safety. Specific challenges include:

- **Flood-Prone Bridges**: Project vehicles will not cross if flowing water is crossing a road or the bridge.
- **Snow and Ice:** Winter conditions exacerbate risks on all roads, and especially on steep gradients and sharp turns. Drivers will carry road treatments as well as cold-weather gear to protect them if they encounter difficulties

SIGNAGE AND MARKINGS

5.2.4. **Developed Areas:** Urban sections of the route, particularly in and around Dushanbe, benefit from well-maintained traffic signage and lane markings. These features provide clear guidance for road users, aiding navigation and reducing confusion in high-traffic zones. Standard signage includes speed limits, directional arrows, and hazard warnings, ensuring compliance with road regulations and enhancing safety.

5.2.5. **Rural and Remote Areas**: In contrast, rural and remote sections of the route often lack signage and lane delineation. This deficiency increases risks, particularly at night or during adverse weather conditions, where visibility is already compromised. When travel under such conditions is required, drivers will stay well below the speed limits. If there are road sections that would benefit from signage, the ER/PMC and/or Rogun JSC will communicate with road authorities and recommend placement as appropriate.

Barriers and Edge Protection

5.2.6. Physical barriers, such as concrete blocks or guardrails, are critical in high-risk locations such as steep inclines, embankments, and bridge approaches. These barriers should align with infrastructure safety standards to protect road users and prevent accidents. Where barriers are needed in hazardous locations, the ER/PMC and/or Rogun JSC will communicate with road authorities and make appropriate requests and recommendations.

LIGHTING AND VISIBILITY

5.2.7. The lack of road lighting across many sections, particularly in rural and remote areas, significantly reduces visibility during nighttime operations. In general, night travel is much reduced in comparison to daytime. When it is necessary, a key mitigation is the pre-start checklist that has to be completed prior to operation. One key item on the checklist is that all lights are working properly, including the high-beam setting, in order for the vehicle to be used,

Road Maintenance

5.2.8. Good road condition is an important element in reducing risks on the open road. That is largely beyond the control of the Project. However, in areas near the site, it is possible that Project traffic could have an impact on road condition, in such cases, the ER/PMC and/or Rogun JSC will work

with the local roads to repair damage and wear that may have been caused by Project traffic. Farther from the site, where Project traffic would not be expected to be a significant contributor to damage and wear, the ER/PMC and/or Rogun JSC will notify the roads authority when there are sections of the road in dire need of repairs in order to be safe for travel and may volunteer work crews to assist or lead the repair effort.

Pre-Transport Planning

5.2.9. When oversized loads or hazardous materials/wastes are to be transported to the site, or hazardous wastes are to be transported from the site, only licensed haulers will be used. They will be required to:

- Identify potential hazards along primary and alternate routes.
- Ensure vehicles and equipment meet operational readiness standards.
- Provide detailed instructions on emergency protocols and alternate route navigation.

VEHICLES AND EQUIPMENT SPECIFICATIONS

5.2.10. As noted previously, many Contractor vehicles on the site, and some that leave the site, appear not to be well-maintained, with broken or missing lights, cracked glass, and other critical flaws. In addition, many do not have fire extinguishers or measures to place on roadways to warn other drives in case the vehicle has to stop for any reason, tie-downs and other means to secure loads were not appropriate for the load.

5.2.11. This presents a significant risk not only to the drivers and the Project vehicles, but also to other drivers, particularly if a breakdown occurs on a dark, narrow, or restricted-visibility section of roadway.

GENERAL VEHICLE REQUIREMENTS

5.2.12. Vehicles used for transporting materials, equipment, and workers between Dushanbe and the Rogun Dam site must adhere to both legal and to Project-specific safety and operational standards to ensure the protection of road users, infrastructure, and the community. Key requirements include:

- **Safety Features:** The Project's OHS requirements include completion of a pre-start checklist, prior to the operation of any vehicle. If a vehicle is not equipped with functional hazard lights, headlights and tail-lights, brake lights, reflective markings, adequate tyre tread, fire extinguishers, warning devices, and other safety features, they will not be placed into service until released by a Supervisor.
- **Load Security:** Similarly, drivers are required to verify that load-securing measures are appropriate for the size, shape, and weight of the load itself.
- **Mechanical Condition**: Vehicles also must be mechanically sound, with regular maintenance required to be in accordance with manufacturers' recommendations.

5.3 ESCORT VEHICLE STANDARDS

5.3.1. If required by Tajikistan law, escort vehicles are required to support safe transport operations, particularly for oversized or high-risk loads. These vehicles must meet the following specification set out in **Section 9.3.8**.

5.4 WORKER TRANSPORT VEHICLES

5.4.1. Vehicles that are to be used for worker transportation must meet specific safety and capacity standards to ensure the well-being of passengers and compliance with local regulations:

- **Seating and Restraints:** Adequate seating and operational seatbelts must be provided for all passengers. Drivers will not proceed unless passengers are belted in.
- **Maintenance and Safety Checks**: Daily pre-start checklists described above will have to be completed for all such vehicles.
- **Designated Pick-Up and Drop-Off Zones**: The ER/PMC and Contractors will designate areas for boarding and alighting passengers and drivers will not allow passengers on or off at any other locations.
- **Use of Other Vehicles for Transport**. Workers may be transported only in designated vehicles approved by the ER/PMC and not on mobile construction equipment, the backs of pickups, or other unapproved vehicles. This will be an element of all driver training and of worker induction, with violations by either drivers or workers subject to penalties that will escalate from verbal warning to formal report to written reprimand to suspension from work to termination.

5.5 DRIVER COMPETENCY AND LICENSING

5.5.1. OHS Audits have found some drivers not to have been licensed for the vehicles and mobile equipment they are operating on site, and almost certainly some of these drivers also take Project vehicles off-site in spite of Tajikistan legal requirements.

DRIVER LICENSING REQUIREMENTS

5.5.2. All drivers must hold valid licenses for the specific class of vehicle they operate, as required under the Code of Road Transport of the Republic of Tajikistan (Law No. 1689). Contractors will also be required to issue Project authorizations for the use of any Project vehicles and equipment. Further, drivers will be required to have a copy of the authorization in the vehicle they are operating.

5.5.3. Additional certifications or endorsements may be required for drivers handling oversized or hazardous loads, aligning with Ministry of Transport regulations.

TRAINING AND COMPETENCY STANDARDS

5.5.4. Drivers will be required to undergo periodic training covering:

- Defensive driving techniques for high-risk and variable conditions.
- Emergency response protocols, including vehicle breakdowns and incident management.
- Procedures for transporting oversized, heavy, or hazardous loads if they are to drive such vehicles.
- Community-sensitive driving practices, such as speed reductions in populated areas and avoiding peak activity times (e.g., school hours).

5.5.5. Records of training completion and certifications must be maintained and verified before assigning drivers to transport operations.

FITNESS FOR DUTY

5.5.6. Supervisors will be required to verify that drivers are fit for duty by checking they are rested, alert, and physically able to operate their vehicles safely.

5.5.7. Drivers who are found to have used alcohol, drugs, or other impairments that affect driving ability will be suspended, and terminated if it occurs again.

6 COMMUNITY ENGAGEMENT AND ROAD SAFETY

6.1 COORDINATION WITH LOCAL AUTHORITIES

6.1.1. Effective traffic management along the Dushanbe–Rogun corridor and in Rogun City requires active collaboration with local authorities, including the Ministry of Transport, State Traffic Police, municipal governments, and./or emergency services. These partnerships will support:

- Planning and permitting oversized and high-frequency transport operations.
- Establishing communication protocols to address road closures, detours, or emergencies.
- Facilitating upgrades to public infrastructure, including traffic management during roadworks.

6.1.2. Advance communication with authorities ensures timely notifications for planned disruptions, while collaboration during emergencies enables rapid responses to minimise traffic flow disruptions and safeguard public safety.

6.2 PUBLIC NOTIFICATIONS AND AWARENESS

6.2.1. Informing local communities about project-related traffic impacts is essential to reduce inconvenience and enhance safety. Notifications will be disseminated through:

- Local communication channels, such as radio, social media, and public noticeboards.
- Jamoats and municipal offices to effectively reach urban and rural populations.

6.2.2. High-impact events, such as oversized load movements must be communicated in advance as required by Tajikistan law.

Grievance and Feedback Mechanisms

6.2.3. The Project's Grievance Redress Mechanism (GRM), which can be found in the Stakeholder Engagement Plan in Volume III of the updated ESIA will enable community members to report concerns or complaints related to traffic disruptions. The GRM includes:

- Accessible submission options, including the PMG and Rogun JSC websites, an address for mailing written complaints, and boxes in Rogun City.
- Transparent resolution timelines, with responses issued within 10 working days.

6.2.4. Feedback received through the GRM will directly inform OS-TMP adjustments. Examples could include:

- Addressing unsafe crossing points identified by residents with targeted safety improvements.
- Unsafe driving habits in general or in specific locations.
- Adjusting transport schedules in response to recurring concerns about HGV activity during school hours.

6.2.5. If issues are raised that are not related, or not entirely related, to Project traffic, Rogun JSC and/or the ER/PMC will work with relevant authorities to resolve the issue.

MONITORING AND CONTINUOUS ENGAGEMENT

6.2.6. Contractor TMPs are required to include monitoring programs, and the ER/PMC will also monitor driver licensing, vehicle condition, and vehicle operation on the site and in Rogun City. They will maintain communication with authorities in order to be cognizant of violations detected by traffic police, and will follow up with root cause investigations and corrective actions. The monitoring of driver

licensing will be carried out through a structured process led by the ER/PMC. Contractors will be required to submit valid driver licenses for all personnel assigned to operate vehicles or machinery, which the ER/PMC will verify against the type of equipment operated and applicable national requirements. A centralized register of licensed drivers will be maintained and regularly updated, enabling periodic field inspections and random spot checks to ensure compliance. In addition, the ER/PMC will coordinate with local traffic police in Rogun City to remain informed of any violations involving project drivers. Any instances of non-compliance will trigger root cause investigations and enforcement of corrective actions, including temporary suspension of drivers or reassignment of duties. This integrated approach ensures that only qualified and authorized personnel operate vehicles under the project, reinforcing road safety and compliance commitments.

6.3 SPEED LIMITS AND TRAFFIC FLOW CONTROL

6.3.1. As noted previously, on-site speed limits are regularly violated. It is not known if the same is true off-site. However, because speed management is a critical component of safe and efficient transport, drivers will be cautioned not to exceed legal speed limits, and to reduce speeds in developed areas and sensitive zones, even if roads are in good condition and uncongested and would support faster travel. Drivers will also receive training to adjust speed in response to conditions. This includes reducing speed during adverse weather, such as heavy rainfall or fog, to maintain safe stopping distances. To support behavioral enforcement, the use of **vehicle telematics systems**, including **GPS-based tracking and speed monitoring**, will be implemented to ensure compliance. These systems will enable real-time monitoring of driver behavior and route adherence. In addition, vehicles may be fitted with **mechanical speed governors**, which physically limit the maximum speed of the vehicle and prevent drivers from exceeding designated thresholds. These combined measures are intended to reinforce compliance, reduce risk, and enable prompt corrective actions where violations occur.

CONGESTION MANAGEMENT AND JOURNEY SCHEDULING

6.3.2. To mitigate traffic congestion and driver delays, scheduling adjustments and infrastructure improvements are critical, particularly during peak periods. Observations indicate the following key challenges and proposed mitigations:

SHIFT CHANGE TIMES OVERLAP WITH SCHOOL HOURS

6.3.3. Worker shift changes currently coincide with local school drop-off and pick-up periods, causing significant congestion near site entrances and along main roads. This can increase risks to children. The ER/PMC and/or Rogun JSC will consult with local officials to discuss potential actions that could reduce risks, which could include adjusting schedules, creating special lanes for children, or implementing other appropriate interventions.

Peak Congestion at Site Entrances

6.3.4. High traffic volumes during worker transport and deliveries lead to bottlenecks and queuing delays. These are rarely significant at present, but if necessary, the ER/PMC will investigate measures to reduce these delays. Key measures, which could include:

- Assigning specific delivery time slots for HGVs and large vehicles to spread traffic more evenly throughout the day.

- Designating express lanes for Project vehicles, supply vehicles, and pre-approved Project vehicles to minimise delays.
- Adding additional parking near the gate for private vehicles and taxis, especially on 15-day shift-change days.

6.4 IMPROVING WORKER TRANSPORT TO SITE

SCHEDULED BUS SERVICES

6.4.1. Establish a routine, scheduled bus service with designated pick-up and drop-off points in key settlements and residential areas in Rogun City where workers reside. This could also include working with a commercial transport service to provide buses to and from Dushanbe on the days of 15-day shift changes, with costs partly or completely covered by Rogun JSC.

6.4.2. To the extent it is possible to use staggered daily work shifts, align bus schedules with those staggered shift times to reduce peak traffic volumes.

6.4.3. Key benefits would include:

- Minimise vehicle queuing at site entrances and reduce the overall volume of traffic along the transport routes.
- Lower the risk of accidents caused by high vehicle density and unregulated driving patterns.
- Decrease emissions and fuel consumption associated with individual car journeys, contributing to better air quality.
- Alleviate strain on the transport network, enhance operational efficiency, and contribute to broader community and environmental benefits.

6.5 INCIDENT AND EMERGENCY RESPONSE

6.5.1. The Contractor TMPs should include the following requirements:

- **Vehicle Breakdowns**: Drivers should secure the scene (including placing warning cones or signals, notify the response team, and arrange for immediate towing or repair. Efforts should focus on minimising disruption to traffic flow.
- **Accidents**: The same requirements should apply, plus the driver (If able) should notify the State Police, the Project emergency team, and if necessary, emergency services for further assistance. Hazardous Spills: The same responses as breakdowns, plus implementation of containment and clean-up protocols using spill kits carried in transport vehicles. Journey Management Procedures

6.5.2. Effective journey management is essential for pre-empting risks, ensuring operational efficiency, and maintaining safety. Key procedures include:

- Pre-Transport Inspections
  - As part of the process, a pre-start checklist must be completed for each vehicle prior to departure. Any vehicle found to be non-compliant with safety or operational standards must be removed from service until necessary corrective actions are taken.
  - Verify compliance with load, weight, and safety requirements, including proper securing of cargo.
- Driver briefings by Supervisors:
  - Conduct pre-departure briefings covering:

- Journey schedules, including start times, planned stops, and arrival times.
- If required, convoy and escort protocols, roles, and responsibilities.
- Emergency procedures and communication protocols.

- Arrival Confirmation
  - Drivers or escorts should confirm arrival with the Supervisor.
- Emergency Contacts and Incident Response

6.5.3. All vehicles will have an emergency contact list, including key project representatives, emergency services Long-Distance and Complex Journeys

6.5.4. For journeys involving oversized loads or escort vehicles, a journey management plan must be developed, including:

- Route maps highlighting hazards and constraints.
- Scheduled stops and emergency pull-off zones.
- Contact details for local authorities and traffic management personnel.

6.5.5. Plans must be shared with stakeholders before departure, and convoy leaders must maintain continuous communication to monitor progress.

6.5.6. Post-Journey Evaluations

- Gather feedback from drivers and escorts to identify areas for improvement.
- Document delays, incidents, or route challenges to inform future journey plans.
- Report findings to support continuous improvement of traffic management practices

7 COMPLEX, OVERSIZED AND HAZARDOUS LOADS

7.1 COMPLEX AND OVERSIZED LOADS

7.1.1. The transportation of complex and oversized loads to the Rogun HPP site presents significant logistical challenges and requires specialised vehicles and planning to ensure the safety of all road users. Oversized Load Types include:

- Large pre-assembled components for dam infrastructure, including turbines and other large equipment. Heavy construction machinery such as cranes and excavators.

7.1.2. **Specialised Vehicles**: These loads necessitate the use of:

- Heavy-Duty Trucks and Flatbed Trailers: For transporting long and heavy components.
- Modular Transporters: To accommodate extremely large or irregularly shaped loads.
- Cranes: For safe and efficient loading and unloading operations.

7.2 HAZARDOUS AND DANGEROUS GOODS

7.2.1. The transport of hazardous materials required for the construction and operation phases of the Rogun HPP must comply with stringent safety regulations to protect public safety and the environment.

7.2.2. Key Hazardous Materials:

- Explosives
- Chemicals and Flammable Substances: Required for tunnelling processes, operational maintenance, and refuelling activities.

7.2.3. Hazardous material transport is governed by:

- Article 46 of the Law "On Roads and Road Activities": Ensuring secure and safe transportation of hazardous goods.
- Government Resolution 779/2006: Outlining requirements for vehicle standards, driver training, and route planning

7.3 MANAGEMENT OF OVERSIZED AND HAZARDOUS LOADS

REGULATORY COMPLIANCE AND OVERSIGHT

7.3.1. The transportation of oversized and hazardous loads for the Rogun HPP must comply with national regulations and international standards, prioritising safety, environmental protection, and operational efficiency. Key regulatory requirements include:

- **Permits**: Special Travel Certificates issued by the Ministry of Transport for oversized and hazardous loads.
- **Route Validation**: Submission of detailed route plans for approval by the State Traffic Police.
- **Police Escorts:** Coordination of escorts for high-risk materials, such as explosives, to ensure secure transit in sensitive or high-risk areas.

7.3.2. Most or all transportation of oversized loads and hazardous materials and wastes will be undertaken by licensed haulers or specialty haulers, not by Project vehicles. Any but the most minor violations of Tajikistan legal requirements by such a hauler will require immediate termination.

HAZARDOUS AND DANGEROUS GOODS

7.3.3. Key Materials and Risks

- Hazardous materials, such as explosives, chemicals, and flammable substances, must be handled with heightened safety protocols to mitigate risks to public safety and the environment.

7.3.4. Specific requirements for transporting explosives (on- and off-site) are provided in the Emergency Preparedness and Response Plan (EPRP) framework, and will be further detailed in Contractor EPRPs.

General Requirements

- **Containment Systems**: Vehicles must be equipped with reinforced containment systems to prevent leaks or spills during transit.
- **Emergency Equipment:** Fire suppression systems and spill containment kits must be available onboard to respond to incidents.
- **Labelling and Placards:** Proper hazard warnings and classification labels must be prominently displayed to inform road users and emergency responders.

ESCORT AND CONVOY OPERATIONS

Role of Police Escorts

7.3.5. Police escorts are required for oversized loads and hazardous materials under Government Resolution 779/2006. Escorts ensure compliance with legal standards and facilitate secure passage through high-risk zones. Key responsibilities for Rogun JSC when organising an escort, which should be documented in a Journey Travel Plan, include:

- Managing road closures and traffic control to allow unobstructed movement.
- Monitoring adherence to validated routes and enforcing speed limits.
- Acting as a liaison with emergency responders in the event of incidents.

ROUTE PLANNING AND SCHEDULING

Balancing Safety and Efficiency

Effective route planning minimises disruptions while maintaining safety for all road users. Plans must validate all routes in collaboration with the Ministry of Transport and State Traffic Police to ensure infrastructure readiness.

NOTIFICATION AND COMMUNICATION

Notification Requirements

7.3.6. In compliance with Government Resolution 779/2006 and Article 46 of the Law "On Roads and Road Activities," the notification process for oversized and hazardous load movements must extend beyond local communities to all road users. This ensures transparency and minimises disruptions to public roadways. Notifications are required to include:

- **Schedules and Road Closures:** Clearly defined timelines for road closures, detours, and expected delays to allow road users to plan alternative routes or adjust travel schedules.
- **Safety Guidance**: Practical instructions for road users, such as speed limits in detour areas and recommended alternative routes to enhance safety and minimise inconvenience.

- **Operational Details:** Comprehensive information on transport operations, including the presence of escort vehicles, validated route plans, and planned traffic control measures.

8 ENVIRONMENTAL MITIGATION MEASURES

8.1.1. As noted, environmental and social impacts from Project traffic could result from Project traffic, dust, and vehicle emissions, noise, spills of hazardous or dangerous substances, biodiversity, changes to biodiversity, and waste management, These are assessed in various chapters of the ESIA and mitigation measures are recorded in the ESMP and either in site-wide management plans or frameworks that establish requirements for Contractor plans.

9 MONITORING, REPORTING AND CONTINUOUS IMPROVEMENT

9.1 MONITORING AND INSPECTION REQUIREMENTS

9.1.1. Regular monitoring and inspections are critical to ensuring compliance with OS-TMP requirements, assessing control effectiveness, and addressing high-priority risks identified in Section 3. These activities will focus on driver and vehicle compliance and safe transport practices.

9.1.2. Key monitoring activities include:

- **Daily Inspections:** As noted above, drivers must complete pre-transport vehicle inspections using a standardised checklist, ensuring roadworthiness and load security.
- **Monitoring Inspections:** Contractor HSE managers and HSE specialists, the ER/PMC, the Traffic Department will all conduct inspections and spot checks of contractor vehicles and documentation at the main gate and at the construction bridge,
- **Observations.** Because all Project vehicles will have visible identifying markings, any person, including Project personnel and managers, will be able to identify observe the condition and operation of those vehicles in Rogun City and elsewhere. Project managers and HSE personnel will report to the Contractor and ER/PMC HSE manager, workers can report using he worker GRM, and members of the public can report using the external GRM.

9.1.3. HSE specialists and managers will record the results of inspections and spot checks and also all instances where there are reports of noncompliance. Responses will be escalated depending on repetition and seriousness and will include verbal warnings, written warnings and reprimands, temporary suspension of driver licenses, and termination. If managers and HSE specialists observe serious violations (excess speeding in certain areas, broken lights, smooth tyres, etc.), they will stop the offending vehicle immediately and cause it to be taken out of service until it can be repaired or returned to site for repairs,

Key performance Indicators (KPI)

9.1.4. KPIs will be used to measure OS-TMP effectiveness and compliance. Suggested KPIs for off-site traffic management include:

- **Traffic Incidents:** Number and severity of reported incidents involving Project-related vehicles.
- **Non-Conformance Rates:** Frequency and resolution timeframes for non-compliance issues.
- **Training Participation:** Percentage of drivers completing mandatory TMP-related training.
- **Congestion Metrics**: Average delays at key transport bottlenecks, such as the main gate
- **Community Feedback**: Trends in complaints related to traffic disruptions or safety concerns.

9.2 TMP REVIEW AND UPDATES

9.2.1. The OS-TMP, and Contactor TMPs, will be reviewed at least semi-annually and revised if needed to incorporate findings from monitoring, audits, and community feedback. It will also be reviewed, and updated if needed, when there are:

- Major changes to transport routes, schedules or incoming materials and goods.
- Recurring non-compliance or incidents requiring updated mitigation strategies.
- Community feedback suggesting new risks or opportunities for improvement.

9.2.2. Updated TMP Framework sections will be communicated to all contractors, drivers, and stakeholders.

Table: Work Space Health (WSH) Risk Assessment Matrix

	Consequences				
Likelihood severity	**Insignificant** Negligible impacts to a minimal area of low environmental or social significance, managed by internal control procedures	**Minor** Minor or minimal short-term impacts to the environment and social areas	**Moderate** Significant impacts to the wider environment or social areas, where short-term restoration works are needed	**Major** Major, persistent and/or extensive impacts to the environment or social areas where longer term remediation is required (> 6 months)	**Catastrophic** Catastrophic and irreversible environmental damage to social areas or environment
A. Almost certain Very high likelihood the risk will occur (>75%)	Moderate	High	Extreme	Extreme	Extreme
B. Likely High likelihood the risk will occur (51 - 75%)	Moderate	High	High	Extreme	Extreme
C. Possible Medium likelihood the risk will occur (21 - 50%)	Low	Moderate	High	High	Extreme
D. Unlikely Low likelihood the risk will occur (5 - 20%)	Low	Moderate	Moderate	High	High
E. Rare Very low likelihood the risk will occur (<5%)	Low	Low	Low	Moderate	Moderate
	Impacts				
	• Not likely to cause injury or ill-health.	• Injury or ill-health requiring only first-aid treatment (e.g. minor cuts & bruises, irritation, ill-health with temporary discomfort). • Little or no possibility of legal implications.	• Injury or ill-health leading to temporary disability (i.e. minor fractures, cuts, wounds that require stitches, etc.). • Require professional medical attention with less than 3 days of medical leave given or hospitalization for less than 24 hours. • Effect on human community and outrage caused is moderate / minimal. • May result in Authority warnings or minimal penalty fines.	• Serious injuries or life-threatening occupational diseases, or injury requiring professional medical attention with 4 or more days of medical leave given or hospitalization for more than 24 hours. • Effect on human community and resulting outrage is high with possibility of civil legal action being taken against the company. • May result in Authority summon to court, stop work order or heavy penalty fines.	• Fatality, fatal diseases or multiple major injuries or permanent disability. • Effect on human community and resulting outrage is high with possibility of civil legal action being taken against the company. • May result in Authority summon to court, stop work order & heavy penalty fines.

Table: Framework Offsite TMP Mitigation Plan:

Key Hazards	Significant Risks	Mitigation Measures	Timing / Frequency	Responsibility
Personnel in close proximity to moving vehicles	Personnel being struck by vehicles	Establish segregated vehicle and pedestrian routes around the site. Pedestrian routes established with barriers, signage and designated crossing points. All personnel to consistently wear high visibility garments whilst working out on site. All site personnel will undergo a site safety induction before starting on site which covers pedestrian/vehicle segregation and site rules and tool box talks to cover changes to traffic routes.	Daily / Continuous	Contractor HSE Supervisor / Site Manager
Site visitors	Personnel being struck by vehicles	Establish safe access points/areas to receive visitors, and general access routes around the site – particularly where client or other non-construction personnel regularly visit. Detail in site layout drawing. All visitors must wear high visibility garments whilst out on site. All visitors must be accompanied at all times by designated site personnel.	Ongoing / All shifts	Contractor E&S Supervisor / Safety Officers
Narrow Vehicle Routes	Striking site personnel and operatives temporary /permanent structures	Establish segregated vehicle and pedestrian routes to working areas and around the site and post warning signs. Detail location on site layout drawing	Weekly review / real-time	Site Engineer / Logistics Coordinator

Restricted work areas	Striking site personnel and operatives temporary /permanent structures	Ensure plant/vehicles can operate safely in the given location. Establish exclusion zone around operational plant such as 360 excavators to keep people out of danger zones where they could be crushed or stuck.	Daily check	Plant Supervisor / HSE Officer
Steep gradients and unstable ground	Overturning vehicles causing injury to driver/ operator or site personnel Vehicle rollover or loss of control	vehicle route gradients to a minimum. Ensure ground is prepared to be able to support weight of heavy vehicles and plant. Select appropriate vehicles for the site conditions (eg roll over protection fitted to all vehicles used on significant gradients).	Prior to use / monitored continuously	Site Civil Engineer / Plant Manager
Vehicles reversing – limited driver visibility	Striking site personnel and other vehicles or buildings	Provide one-way routes through the site and/or turning circles to eliminate reversing. Vehicles must have rear vision aids, CCTV and/or mirrors. Keep visual warning light on at all times and use audible alarm warning when reversing. Trained signaler/marshal assists driver and controls pedestrians.	Daily	Traffic Marshal / Driver Supervisor
Vehicles entering and leaving site	Striking public, site personnel and other vehicles	Security/traffic marshals to control incoming and outgoing vehicles, e.g. with stop go boards. Designated gate numbers and one-way system where possible. All pedestrian access and egress through site pedestrian gate only. Hoarding/fencing erected around the project to prevent access to the general public. Site gates closed at all times when not in use.	Each shift / entry & exit	Gate Marshal / Contractor Logistics
Vehicles being	Injury to	Provide temporary barriers or	Per delivery	Unloading Crew

unloaded on public highway	passing pedestrians	signage to ensure public safety (no lifting over open highway). Traffic marshals to be in attendance at all times when vehicles operating to ensure public safety		Supervisor / Public Safety Officer
Noise, vibration and emissions	adverse health effects on site personnel and pedestrians	Vehicles to be regularly inspected and maintained. Noise assessment to be carried out and monitored by contractor	Monthly or after complaints	Environmental Engineer
Driver competence	Unsafe operation or condition of vehicle	All drivers to hold a current driving license and a current certificate of training appropriate for the vehicles they are assigned to operate. All drivers must conduct the essential safety checks required for the equipment they operate – e.g. brakes, lights, signals, wipers, mirrors, out riggers, safety pins fitted to quick hitch attachments on excavators, etc. Drivers/operators to be supervised and their performance monitored.	Quarterly / ongoing	Contractor HR / HSE Unit
Vehicle arrival and departure	Site congestion Striking site personnel and pedestrians or causing road traffic accidents Vehicle driver being struck by another vehicle or load.	Traffic marshals to control and monitor incoming and outgoing vehicles. Holding area to be used to park vehicles so as not to cause congestion on site. Drivers must wear safety helmet, safety boots and a high visibility garment when out on site. Drivers provided with delivery location and site rules before arrival at site.	Each delivery	Traffic Coordinator / Entry Controller
Non site vehicles	Striking	Clear instructions given to	Each entry	Security

entering the site	pedestrians, site personnel and other vehicles	drivers on safe parking area and site rules – eg by signage at point of entry.		Supervisor / Safety Officer
Disruption to the local traffic and highways eg wide load etc	Causing congestion and possible road traffic accident	Vehicles to use the designated approach/exit roads only. Effective communication and liaison with the local community.	Pre-transport and during operations	Logistics Lead / Community Liaison
Loading and unloading operations	Lifting operations – load striking/fall on site personnel Injury from manual handling of heavy loads Fall from vehicle	Safe systems of work to be followed for loading and unloading vehicles e.g. loads to be pre-slung, effective fall prevention provided as necessary, controlled by: o A trained and competent slinger/signaler. Site personnel to be segregated from the unloading/loading area. Do not lift loads over people. Mechanical means to be used for all loads over 20kg. All loads must be secured when traversing site roadways. All lifting equipment must be in sound condition, suitable for the loads being lifted and have current certificate of examination.	Each operation	Lifting Supervisor / HSE Officer
	Falling Loads when Loading /Unloading			
	Falling Loads during rear loading /unloading;			
	Tip-over – Forklift being used incorrectly;			
	Loss of Load/ Falling Objects			
Accidents due to blind spots	Lack of visibility	Install mirrors/CCTV, use spotters, enforce one-way systems, alarms.	Daily	Traffic Marshal / Driver Supervisor
	Excessive Speed	• On public roads, Project vehicles will adhere to all speed limits (40 km/hr • • Project traffic will be limited to a maximum speed of **20 km/hr** in Lots 2 and 3 and active construction sites areas.	Throughout construction	Construction Manager Contractors E&S Supervisor

		• Project traffic will be limited to a maximum speed of **20 km/hr** at all times through the tunnel. • Project traffic will be limited to a maximum speed of **10 km/hr** at the Site Office and Workers Accommodation Camp.		
Vehicle misuse, increased risk of accidents	Malfunction of vehicles or mobile plants;	Install edge protection (barriers/timber blocks), restrict access.	Post-installation / Daily check	Construction Manager / Safety Team
Congestion, collisions at gates	Inappropriate use of vehicles and equipment	Hold vehicles off-site, traffic marshals control flow, driver orientation.	Each delivery	Traffic Coordinator / Entry Controller
Non-site vehicles entering	Mobile Plant/ Vehicle Collision	Install warning signs, assign parking, brief visitors on access rules.	Each entry	Security Supervisor / Safety Officer
	Damage to Plant Buildings	Designated access roads, community notification plans.	Pre-transport and during operations	Logistics Lead / Community Liaison
Falling loads, handling injuries	Operator Training and Experience	Use mechanical lifting, segregate areas, certified lifting gear and trained slingers.	Each operation	Lifting Supervisor / HSE Officer
Speeding vehicles	Striking site pedestrians and other vehicles	Set site speed limits, provide signage and monitor that all vehicles to observe the site speed limits. - Set site speed limits, provide signage and monitor that all vehicles to observe the site speed limits. Speed will be monitored within the site and the access road (using speed meter devices) on a weekly basis.	Weekly monitoring / spot checks	Site Safety Supervisor / Contractor
Vertical Edges – eg retaining walls etc once constructed	Falling of vehicle and vehicle loads. Injury to site personnel	Road barriers/timber baulks installed at vertical edges. Controlled speed limits	Post-installation / Daily check	Construction Manager / Safety Team

Roles and Responsibilities:

Rogun JSC holds overall responsibility for construction and operational activities at Rogun HPP, including traffic safety and contractor management. Traffic management is currently overseen by Rogun JSC's Security Department. The Employer's Representative (ER--and in the future a Project Management Consultant (PMC)) manages contractor traffic operations for both construction and operational activities in coordination with Rogun JSC.

The Traffic Management Organisational Structure (**Figure 6-1**) outlines the allocation of authority, oversight, and operational responsibilities among key stakeholders, including Rogun JSC, the Employer's Representative, the Security Department, and contractors.

Table 6-1 defines the primary roles and responsibilities for traffic management and TMP Framework implementation. These responsibilities extend to all personnel on-site, including technical specialists, emergency response teams, logistics personnel, delivery drivers, and visitors, even if not explicitly represented in the organisational structure.

Table 9-1 – Roles and Responsibilities in Traffic Management and TMP Framework Implementation at Rogun HPP

Role	Responsibilities
Project Management Group (PMG)	▪ Holds high-level authority over Rogun HPP, ensuring compliance with project objectives, national and international standards, and lender requirements. ▪ Allocates resources and oversees the successful implementation of the TMP. ▪ Ensures site-wide coordination across all stakeholders to maintain traffic and safety compliance.
Rogun JSC	▪ Responsible for all aspects of construction and operation at Rogun HPP, including traffic safety and contractor management. ▪ Ensures ER/PMC approval and enforcement of the TMP, ensuring alignment with project safety objectives and international standards. ▪ Maintains traffic safety oversight through the Security Department and ensures Lot-specific TMP compliance across all contractors. ▪ Ensures there are regular audits and inspections to assess TMP compliance. ▪ Coordinates with government authorities to secure permits and ensure compliance with national traffic regulations.
Security Department (Rogun JSC)	▪ Enforces access control and traffic management protocols for all vehicles and personnel. ▪ Operates the CCTV system to monitor compliance with designated routes and vehicle movement restrictions. ▪ Investigates traffic-related incidents, reports non-compliance, and ensures corrective actions are taken. ▪ Provides traffic safety briefings and works with contractors to mitigate site-specific transport risks. ▪ Monitors adherence to exclusion zones and restricted areas during high-risk operations.

Role	Responsibilities
Employer's Representative (current) and Project Management Consultant (future)	*3. Note: The PMC will eventually replace the Employer's Representative and oversee all technical and ESHS performance for all contractors, ensuring consistency and alignment across the project lifecycle.* ▪ Acts on behalf of Rogun JSC in defining, supervising, and enforcing traffic management requirements. ▪ Oversees contractor compliance with TMP requirements and supervises all contractors across Lots 1-4. ▪ Reviews and approves Lot-specific traffic management plans, ensuring alignment with the overarching site-wide TMP. ▪ Conducts compliance audits and inspections, focusing on high-risk areas, traffic bottlenecks, and contractor performance. ▪ Coordinates with Rogun JSC and the Security Department to address transport compliance issues, risk mitigation, and operational challenges. ▪ Integrates traffic management strategies into broader project safety and operations planning.
Site Contractors (EPC and Non-EPC) *EPC Contractors: Engineering, Procurement, and Construction Contractors responsible for major project infrastructure.* *Non-EPC Contractors: Contractors undertaking preparatory, maintenance, or ancillary works.*	All site contractors are individually and collectively responsible for ensuring safe, compliant, and efficient traffic and transport operations within their designated areas. Key responsibilities include: ▪ Develop conforming TMPs for their own operations and areas, based on their own works and traffic requirements ▪ Supervise and enforce compliance by their subcontractors of TMP requirements. ▪ Ensure compliance with Lot-specific TMPs, aligned with the Rogun JSC site-wide traffic management framework. ▪ Train all personnel, including drivers, operators, and site workers, on designated transport safety protocols. ▪ Conduct regular inspections of vehicles, equipment, and traffic control measures to ensure safety compliance. ▪ Provide and maintain safety infrastructure, including signage, barriers, and designated pedestrian pathways. ▪ Report transport-related incidents, near misses, and safety risks to Rogun JSC and the Employer's Representative/PMC. 4. **5. Operational Oversight – Project Managers, Supervisors, and HSE Teams** ▪ Oversee daily transport operations, ensuring compliance with TMP rules and safe road usage. ▪ Conduct induction programs and ongoing training to ensure workers are aware of site-specific traffic hazards. ▪ Monitor driver and vehicle safety compliance, enforcing corrective actions when violations occur. ▪ Support Rogun JSC and the PMC in implementing Lot-specific TMPs while maintaining site-wide alignment. ▪

Role	Responsibilities
Government Authorities (e.g., Ministry of Transport, Police, Local Municipal Authorities)	▪ Tajikistan government bodies play a critical regulatory and oversight role in ensuring the safe operation of traffic and transport activities associated with the Project. Key responsibilities include: ▪ Issue permits for vehicle operations, oversized load transport, and hazardous material handling. ▪ Conduct inspections to verify compliance with national traffic and transport laws. ▪ Investigate major traffic incidents and provide regulatory guidance on safety measures. 6.

Traffic Monitoring Responsibilities

The Contractor shall bear full responsibility for the **day-to-day implementation** and **monitoring** of the Traffic Management Plan (TMP) across all active project areas. Monitoring efforts will focus on the following:

- **Traffic flow conditions** and queue lengths at work zones.
- **Adherence to designated routes** and speed limits by all project vehicles.
- **Interaction between construction traffic and the public**, particularly in sensitive areas such as schools, community centers, and residential zones.
- **Compliance with physical traffic control measures**, such as barriers, signage, and signal operations.

Monitoring will be both **routine and event-driven**, with the ER/PMC conducting periodic oversight inspections and audits to verify compliance and identify emerging risks.

Reporting

In accordance with the monitoring schedule, the Contractor shall submit structured reports to the ER/PMC and Site Engineer, summarizing traffic management performance and any incidents of concern. Reports will be submitted on a **monthly basis**, or more frequently if warranted by events. Each report shall include the following:

- **Forecasted or emerging traffic management concerns**, including planned works or route changes that could impact flow or safety.
- **Breaches of TMP provisions**, including vehicle-related incidents, unauthorized movements, or failure to adhere to designated routes or timings. Each breach report must include the **probable cause**, **consequences**, and **corrective actions** taken or proposed.
- **Traffic monitoring data**, including congestion trends, safety observations, and KPIs (e.g., number of near misses, average compliance with speed limits, frequency of reversing incidents).

- **Complaints received** from workers, contractors, local communities, or public authorities regarding traffic safety, noise, delays, or other concerns, along with the resolution timeline and mitigation steps undertaken.
- **Improvement initiatives** or lessons learned from incidents, audits, or near misses, including follow-up actions and updates to TMP measures.

Reports will be prepared using standardized templates provided or approved by the ER/PMC, and will form part of the Contractor's ESHS performance evaluation.

Incident and Non-Compliance Reporting

In the event of an incident involving project vehicles, pedestrians, or third parties—whether or not injuries occur—the Contractor must:

- **Notify the ER/PMC immediately**, and no later than 24 hours after the incident.
- Initiate a **root cause investigation**, involving relevant site supervisors and safety staff.
- Submit a detailed **Incident Investigation Report** within 72 hours, including contributing factors, findings, and preventive recommendations.
- Update relevant risk registers and modify site-specific TMPs where necessary to address identified vulnerabilities.

The Contractor will inform and site Engineers of the following;

- Any problems they foresee with traffic management on site and any problems they have
- regarding the management of traffic.
- Any instances where the requirements or limits imposed by this TMP are breach or
- exceeded probable causes and actions required to be taken to mitigate, remedy the
- impacts arising from non-compliance.
- The Traffic management monitoring results and improvement initiatives on a monthly
- basis.
- Any complaints received regarding traffic as soon as practical after receipt of the
- complaint.

Monitoring action	Description	Frequency	Responsible party	Reporting mechanism	Performance indicator
Traffic flow and congestion levels	Monitor vehicle movement, queue lengths, delays at site gates and access roads.	Daily observations, supported by spot audits during peak hours.	Contractor Traffic Manager / ER/PMC	Site traffic logs, congestion reports, observation checklists	No prolonged delays; traffic flow maintained within planned limits
Vehicle compliance	Check condition, licensing, speed limit compliance, signage, and route adherence.	Weekly inspections and random spot checks.	Contractor E&S Supervisor / Vehicle Maintenance Officer	Vehicle inspection reports, GPS tracking data	100% of vehicles inspected monthly; <5% non-compliance
Driver licensing and competency	Ensure drivers have valid, appropriate licenses and training.	Monthly registry check; spot inspections	Contractor HR / ER/PMC	Driver license registry, spot audit reports	100% drivers verified and authorized

PPE and safety signage	Ensure use of high-visibility clothing and maintenance of site traffic signs.	Weekly site walkthroughs	Safety Officer / Site Supervisor	PPE compliance checklist, signage maintenance logs	100% PPE compliance; all signs intact and readable
Traffic incident reporting	Record and respond to near-misses, accidents, and non-compliances.	Immediate incident reporting and monthly summaries	Contractor HSE Lead / ER/PMC	Incident logs, investigation reports, corrective action records	All incidents reported within 24 hours; corrective actions closed within 7 days
Community complaints on traffic	Track complaints from public regarding noise, dust, delays, or unsafe practices.	As received; integrated into monthly reporting	Community Liaison Officer / Contractor	Complaint log, follow-up response records	All complaints acknowledged within 48 hours; resolution within 10 days
Training and induction delivery	Ensure all staff receive traffic safety training and refreshers.	Induction for new staff; monthly toolbox talks	Contractor Training Coordinator / HSE Team	Training attendance sheets, induction logs	100% staff trained before site access; refresher talks monthly
Monitoring equipment maintenance	Maintain functionality of speed meters, cameras, signage, and alarms.	Monthly technical inspection	Contractor Maintenance Team / ER/PMC	Equipment maintenance records	100% operational status of all monitoring tools

Training, Induction, and Awareness

General Training Requirements

All personnel drivers, operators, supervisors, and ground workers shall receive appropriate training and induction related to traffic management. This includes:

- **Project-specific safety induction**, mandatory for all new staff and visitors, covering site layout, designated access points, pedestrian-vehicle interaction risks, and emergency protocols.
- **Daily pre-start briefings** for drivers and plant operators, addressing route conditions, expected vehicle movements, hazards, convoy coordination, and radio communication protocols.
- **Toolbox talks**, conducted at least weekly or when traffic routes change, focusing on specific risk scenarios, lessons from incidents, or updates to control measures.

All Site personal will be briefed on their requirements to comply with the Project Contract conditions relating to site personal, in particular;

- Wearing of e high visibility vest
- Erecting of Road safety signs
- How to use traffic control signs

Key Topics Covered in Training

The training program shall ensure understanding of the following critical areas:

- **Mandatory use of PPE**, including high-visibility clothing for all personnel in or near traffic areas.
- **Correct use and interpretation of traffic control signs**, including STOP/SLOW paddles, flagging procedures, and communication signals.
- **Safe driving behavior**, including speed control, reversing protocols, mobile phone restrictions, and fatigue management.
- **Procedures for reporting hazards**, near misses, or non-compliances encountered during traffic operations.
- **Awareness of community interface risks**, especially near schools, market zones, or where public traffic intersects with project activity.

Driver and Operator Competency

Only drivers holding **valid licenses and relevant certifications** for the type of vehicle or plant operated shall be authorized to work on-site. The Contractor is responsible for verifying licenses and maintaining an up-to-date driver/operator registry. The ER/PMC may conduct spot audits to verify compliance and test knowledge of key TMP principles

CONCLUSION:

The movement of vehicles associated with the construction and operation of the Project poses a risk to workers, pedestrians, the community and environment. Construction and Operation activities are expected to be 24 hours per day, 7 days per week, with associated vehicle movements. The potential impacts and risks associated with construction and operation traffic include:

- Potential incidents, injuries or fatalities associated with vehicles, roadway hazards or obstructions.
- Conflicts between road users due to increased usage of public roads by light and heavy vehicles.
- Property damage to roadside properties, water sources etc. from road construction-activities
- Environmental impacts from road construction and use, including impacts to air quality, noise, biodiversity values, water quality.

The Traffic Management Plan Framework for Rogun HPP outlines the principles, procedures, approaches, steps and GIIP that will for the dam construction project is designed to ensure the safety and efficiency of traffic flow in the impacted areas. The purpose of this Framework is to identify the minimum requirements for the Contractors' Traffic Management Plans, and to ensure the Plans contains the required content, although the Plan may vary based on the potential hazards and risks of the works the Contractor is required to perform.

Through careful planning, implementation of strategic measures, and effective communication, the follow-up C-TMP will minimize disruptions and maintain a safe environment for all road users. Regular monitoring and review will ensure the continued success of the plan and allow for timely adjustments based on real-time observations and feedback. To these ends every Contractor employed at Rogun Hydropower Project (the Project) will prepare and implement a Traffic Management Plan or Contractor's Traffic Management Plan (TMP or C-TMP) that is consistent with this TMP Framework. The Plan will be reviewed and approved by the Contractor's Project Manager and submitted to the Employer's Representative (ER) and/or the Project Management Consultant (ER/PMC) for review. Once approved, it shall be diligently implemented by the Contractor. New Contractors must have an

approved Plan before mobilizing workers to the site. Existing Contractors must have an approved Plan within six months of the date that World Bank financing is provided to the Project or as otherwise required by the contract. If an existing Contractor has a TMP that has been approved by the ER, a new plan is not needed if the ER verifies the existing plan is equivalent to what is required by this Framework, or if the Contractor makes sufficient changes to the existing plan that the ER determines it is equivalent.